UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,248	10/16/2001	Mark A. Hoffman	CRNC.83071	6008

46169 7590 04/09/2007

SHOOK, HARDY & BACON L.L.P.
Intellectual Property Department
2555 GRAND BOULEVARD
KANSAS CITY, MO 64108-2613

EXAMINER	
MORAN, MARJORIE A	
ART UNIT	PAPER NUMBER
1631	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
2 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/981,248
Filing Date: October 16, 2001
Appellant(s): HOFFMAN ET AL.

Jean M. Dickman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/31/06 and amended 11/20/06 appealing from the Office action mailed 2/28/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 25-27, 29-30, 55-57, 59-60, 85-87 and 89-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over ICHIKAWA (Internal Medicine (July, 2000) vol. 39, no. 7, pp. 523-524) in view of EVANS et al. (IDS ref: Science (Oct. 1999) vol. 286, pp. 487-491) and REINHOFF et al. (US 2002/0049772 A1, filed 5/26/2000).

Claims 25, 55, 85 and 91 are directed to a computer-implemented method for processing hereditary data, and to a computer system and medium comprising instructions or components for performing the method, wherein the method comprises receiving a genetic test result value for a person, querying a computerized table listing polymorphism values and atypical clinical events associated with h polymorphism values, determining if the genetic test result value is a polymorphism value associated with an atypical clinical event, and if so, accessing a list of risk-associated agents, and outputting an "interpretation" of the genetic test result value and the list of risk-associated agents. Claims 26, 56, 86 and 91 further limit the method to comprise determining if a patient has been exposed to a risk-associated agent. Claims 27, 57, and 87 limit the method to further comprise accessing an electronic medical record. Claims 29-30, 59-60 and 89-90 limit the method to comprise initiating a clinical action if

a patient has been exposed to a risk-associated agent, specifically to inform a clinician to no longer administer the agent.

ICHIKAWA teaches a method for processing hereditary (genetic) data related to response to azathioprine or mercaptopurine (clinical agents) wherein genetic tests results for individual patients are received, the presence of a polymorphism is determined, wherein particular mutations or polymorphisms are associated with atypical clinical events (side effects) of administration of various drugs, and a decision made to change a drug dosage (p. 523). Since drug dosages are based on the genetic testing results in the method of ICHIKAWA, the method necessarily includes a step of outputting the test results and the list of drugs. ICHIKAWA also teaches that one decision based on the results may be discontinuation of drug use (p. 523, left column). ICHIKAWA does not specifically teach querying a computerized table listing polymorphism values and atypical events associated with the polymorphism values, electronic medical records, a computer-implemented method, a computer system or a computer-readable medium.

EVANS teaches association of a variety of drugs with polymorphisms, which are also known to be associated with "idiosyncratic" drug reactions or altered drug sensitivity (p. 489, Table 1), thus teaching a list of "risk-associated agents". EVANS teaches that his Table 1 is a computerized table of atypical clinical events associated with polymorphism values (see the legend for Table 1 which states "A comprehensive listing is available at www.sciencemag.org/feature/data/104449.shl"). It is noted that Table 1 of EVANS includes the drugs and at least one of the polymorphic sites taught

by ICHIKAWA. It is further noted that the table of EVANS contains many of the genes, polymorphic sites, and atypical events disclosed by the instant specification in Table 2 on page 16. EVANS also teaches automated systems to associate an individual's genotype with polymorphic genes in order to optimize drug administration and disease treatment (p. 490, right column). EVANS does not specifically teach accessing an electronic medical record.

REINHOFF teaches a computer-implemented method, and a system and computer-readable medium comprising instructions for performing the method, wherein information with regard to a patient's polymorphic profile is linked to a degree of response of the patient to a treatment, specifically to side effects; i.e. an "atypical" clinical response (paragraphs 33, 38, 57 and 59). Specifically, REINHOFF teaches populating a computerized database with genotypic and phenotypic data (para 38) and teaches that polymorphic profiles of individuals may be associated with response to drugs in a computerized method (para 57). He further teaches analysis of such data in a computerized database (para 58), thus teaching a step of "querying" a computerized listing comprising polymorphic data and atypical clinical events associated with the polymorphic data. REINHOFF also teaches that a variety of electronic medical and/or clinical records may be accessed in his method (paragraph 27).

It would have been obvious to one of ordinary skill in the art at the time of invention to have computerized, or automated, the genetic screening method of ICHIKAWA, as taught by REINHOFF, and to have accessed/queried a computerized list of treatment/drug options, as taught by EVANS, in the automated method of ICHIKAWA

and REINHOFF, where the motivation would have been to facilitate use of the method to identify patients appropriate for treatment when a choice is to be made among various options, as taught by REINHOFF (paragraph 59) and/or to determine an appropriate dosage of the agent, as taught by REINHOFF (paragraph 57) and ICHIKAWA (p. 523, left column, last paragraph).

Claims 28, 58, and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over ICHIKAWA (Internal Medicine (July, 2000) vol. 39, no. 7, pp. 523-524) in view of EVANS et al. (IDS ref: Science (Oct. 1999) vol. 286, pp. 487-491) and REINHOFF et al. (US 2002/0049772 A1, filed 5/26/2000).as applied to claims 25-27, 29-30, 55-57, 59-60, 85-87 and 89-90 above, and further in view of FEY et al. (US Pub. 20020038227, filed 2/26/01).

The claims recite a method, computer system and medium for processing hereditary data, as set forth above. Claims 28, 58, and 88 further limit the electronic medical record to one in a comprehensive healthcare system.

ICHIKAWA, EVANS, and REINHOFF make obvious a computerized method for processing hereditary data, as set forth above. REINHOFF specifically teaches accessing electronic medical records, also as set forth above.

FEY teaches an electronic database for comprehensive/centralized health care management wherein the databases comprise a plurality of clinical information and test results for individuals (paragraphs, 4, 43 and 49).

It would have been obvious to one of ordinary skill in the art at the time of invention to have accessed the medical records in the method of ICHIKAWA, EVANS and REINHOFF in a comprehensive healthcare system/database, as taught by FEY, where the motivation would have been to associate phenotypic information specific for a patient with genotypic information in a clinical setting in order to better treat/test the patient, as taught by REINHOFF (paragraph 67).

(10) Response to Argument

A) Response to arguments regarding the rejection under 35 USC 103 of claims 25-27, 29-30, 55-57, 59-60, 85-87 and 89-91 over ICHIKAWA, EVANS and REINHOFF:

1. In response to the argument that there is no motivation to combine ICHIKAWA, EVANS and REINHOFF, it is noted that appellant then tacitly admits on page 7 of the Brief that a motivation was in fact provided as appellant argues that "the examiner has not pointed to any suggestion to combine the art in the manner suggested by the examiner." In addition, appellant reiterates the motivation on page 8 of the Brief. In response to the latter argument, appellant's attention is directed to the fact that the motivation set forth in section (9) above and reiterated below is found in the prior art of ICHIKAWA (p. 523) and REINHOFF (paragraphs 57 and 59).

"It would have been obvious to one of ordinary skill in the art at the time of invention to have computerized, or automated, the genetic screening method of ICHIKAWA, as

taught by REINHOFF, and to have accessed/queried a computerized list of treatment/drug options, as taught by EVANS, in the automated method of ICHIKAWA and REINHOFF, where the motivation would have been to facilitate use of the method to identify patients appropriate for treatment when a choice is to be made among various options, as taught by REINHOFF (paragraph 59) and/or to determine an appropriate dosage of the agent, as taught by REINHOFF (paragraph 57) and ICHIKAWA (p. 523, left column, last paragraph)."

The argument set forth on pages 8-9 of the Brief that one would not have been motivated to combine the references because the treatment of REINHOFF is already known does not appear to be germane to the claims as there is no limitation recited in the claims regarding "known" or "unknown" treatments or agents. Further, the agents (treatments) recited in the instant claims are necessarily "known" as they are found in the list of risk-associated agents which is accessed. The motivation set forth above states that it would have been obvious to have computerized the genetic screening method of ICHIKAWA both to facilitate use of the screening method and in order to identify *patients* for which a specific "treatment" is appropriate, not to identify a "unknown" versus a "known" treatment.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was

within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

2. In response to the argument that there is no expectation of success in combining the teachings of ICHIKAWA, EVANS and REINHOFF, it is noted that all three teach association of polymorphisms with side-effects or idiosyncratic reactions caused by drugs. As all the references teach similar methods, EVANS teaches a computer-implemented system, and REINHOFF specifically teaches a computerized method of associating a genetic/polymorphic profile with patient response to drugs, the examiner maintains that one skilled in the art would reasonably have anticipated success in combining the teachings of ICHIKAWA, EVANS, and REINHOFF.

3. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to the argument that ICHIKAWA does not teach accessing a list of risk-associated agents and does not teach a computer system or instructions on computer readable medium, appellant is reminded that the rejection is made over a

combination of references under 35 USC 103, wherein EVANS teaches an automated method and a computerized list of risk-associated agents.; and REINHOFF specifically teaches a computerized method, and a computer system and instructions on a computer-readable medium. In response to the argument that ICHIKAWA does not teach outputting an interpretation of a genetic test result value and a list of risk-associated agents, appellant is reminded that ICHIKAWA does, in fact, teach a list of specific polymorphisms associated with a risk-associated agent (azathioprine), and teaches that treatment with the agent was discontinued (page 523, right column, second paragraph). It would have been necessary for the physician and/or patient to have been made aware of the association in order to make the decision to discontinue treatment, and any type of communication is interpreted to be an "output," therefore the teaching of ICHIKAWA makes obvious "outputting" the results of a method associating polymorphism data, atypical clinical events, and risk-associated agents. Further, REINHOFF specifically teaches that results of computerized polymorphic profiling can be returned to a health care provider for communication to a tested individual (paragraph 31), which is a teaching for "outputting" the results of a computerized method. REINHOFF also teaches that his profiling program can be used to ascertain whether an individual nucleic acid variation will result in amplified or reduced efficacy of a pharmaceutical agents (i.e. an atypical clinical result) at paragraph 14. As EVANS teaches a list of agents associated with particular polymorphisms and atypical clinical results which may be "accessed" in a method of determining whether a particular genetic test value is associated with an atypical clinical result and agent, the examiner

maintains that ICHIKAWA, EVANS and REINHOFF, in combination, do teach all of the claimed limitations and make obvious outputting the results of a method to associate a genetic test result with an atypical clinical event and a risk-associated agent; wherein the results include the genetic test result and list of risk-associated agents, for the reasons set forth above. In response to the argument that ICHIKAWA provides no suggestion to automate accessing a list of risk-associated agents, appellant is reminded that the motivation to combine the references is provided by the prior art of REINHOFF, as set forth above.

In response to the argument that EVANS fails to teach *computerized* steps, a computer system, and computer-readable medium, it is noted that EVANS does teach automation in his method, and does teach a computerized list of risk-associated agents associated with polymorphic sites, and atypical clinical events. Appellant is again reminded that the rejection is made over combination of references wherein REINHOFF supplies a specific teaching for computerized steps, a computer system, and a computer-readable medium. The motivation to access the list of EVANS in a method to determine whether a particular genotype is associated with a risk-associated agent is found in REINHOFF, who teaches that "in cases where polymorphisms are known to be associated with or cause differences in response to the treatment," the information can be used to deign clinical trials and improve treatment of patients (paragraph 14). As the point of ICHIKAWA's teaching is to improve treatment of patients by associating specific polymorphisms with atypical responses to clinical agents, the examiner maintains that it would have been obvious to have accessed the list of polymorphisms known to be

associated with atypical clinical responses and risk-associated agents taught by EVANS in a computerized method, as taught by REINHOFF, in the method of ICHIKAWA, where the motivation would have been to facilitate use of the method of associating a polymorphism value with an agent and atypical clinical response in order to identify those patients for whom a specific treatment is appropriate and/or to determine an appropriate dose of the treatment, as taught by REINHOFF at paragraph 59. It is noted that ICHIKAWA teaches identification of patients for which treatment with a particular agent is inappropriate (p. 523, right column) and teaches the desirability of determining an appropriate dosage of an agent based on a polymorphic result (p. 523, left column, last paragraph).

In response to the argument that REINHOFF fails to teach or suggest computerized steps of accessing a list risk-associated agents, appellant is reminded that the rejection is made over a combination of references wherein EVANS teaches a list of risk-associated agents which are associated with polymorphism values and atypical clinical events, as set forth above. Further, REINHOFF provides motivation for accessing such a list, as set forth in the preceding paragraph. In response to the argument that REINHOFF does not teach outputting an interpretation of one or more genetic test result values and a list of risk-associated agents, appellant's attention is directed to paragraph 31 wherein REINHOFF specifically teaches that results of computerized polymorphic profiling can be returned to a health care provider for communication to a tested individual, which is a teaching for "outputting" the results of a computerized method. In response to the argument that REINHOFF does not teach a

computer system or computer-readable medium comprising code/components for running a method, appellant's attention is directed to Figures 3-5, and paragraphs 11-13 and 45-48 wherein REINHOFF specifically teaches a computer system comprising components and various types of computer readable comprising instructions/code for running a method associating polymorphic profiles with response to treatment (see also paragraphs 55-59).

For all the reasons and motivations set forth above, the examiner maintains that the references, in combination, make obvious all of the limitations of claims 25-27, 29-30, 55-57, 59-60, 85-87 and 89-91.

B) Response to arguments regarding the rejection under 35 USC 103 of claims 28, 58, and 88 over ICHIKAWA, EVANS, REINHOFF, and FEY:

1) In response to the argument that FEY does not teach or suggest a method in a computer system, a computer system, or a computer-readable medium comprising components/instructions for running the method, appellant is reminded that the rejection is made over a combination of references wherein ICHIKAWA, EVANS and REINHOFF are relied upon for teaching various method steps and computer components, as set forth above. FEY is relied upon for a teaching of electronic medical records stored in a comprehensive healthcare system. It is noted that appellant admits on page 14 of the Brief that FEY teaches that data and test results are stored in a "centralized health

screening and management system," thus the examiner maintains that the combination of references does, in fact, teach and/or suggest all of the limitations recited in the claims.

2) Appellant argues that there is no motivation to combine the references, then admits on page 15 of the Brief that "the Office Action states that "it would have been obvious to one of ordinary skill in the art at the time of invention to have accessed the medical records in the method of ICHIKAWA, EVANS and REINHOFF in a comprehensive healthcare system/database, as taught by FEY, where the motivation would have been to associate phenotypic information specific for a patient with genotypic information in a clinical setting in order to better treat/test the patient, as taught by REINHOFF (paragraph 67).""

In response to the argument that it would not have been "desirable" to have combined REINHOFF with ICHIKAWA, EVANS, and FEY because the therapy of REINHOFF is known, it is again noted that the instant claims do not recite any limitations with regard to a "known" agent. Further, the agents on the list of risk-associated agents which is accessed in the method and in the instructions of claims 25 and 85, and as part of the "accessing component" of claim 55 MUST be known or the agents would not be on the list. In addition, all of the agents disclosed by ICHIKAWA and EVANS are "known." It would be impossible to associate "unknown" agents with the genetic test result and atypical clinical result taught by ICHIKAWA and disclosed in the table of EVANS, therefore the argument that there is no motivation to combine

REINHOFF with ICHIKAWA and EVANS because the treatment (agent) of REINHOFF is "known" is not persuasive.

For the reasons and motivations set forth above, the examiner maintains that the combination of ICHIKAWA, EVANS, REINHOFF and FEY makes claims 28, 58, and 88 obvious.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

MARJORIE A. MORAN
PRIMARY EXAMINER

Conferees:

RAM R. SHUKLA, PH.D.
SUPERVISORY PATENT EXAMINER

Andrew Wang
Supervisory Patent
Examiner